

# HY-8 Culvert Analysis Report

## Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 32.79 cfs

Maximum Flow: 36.85 cfs

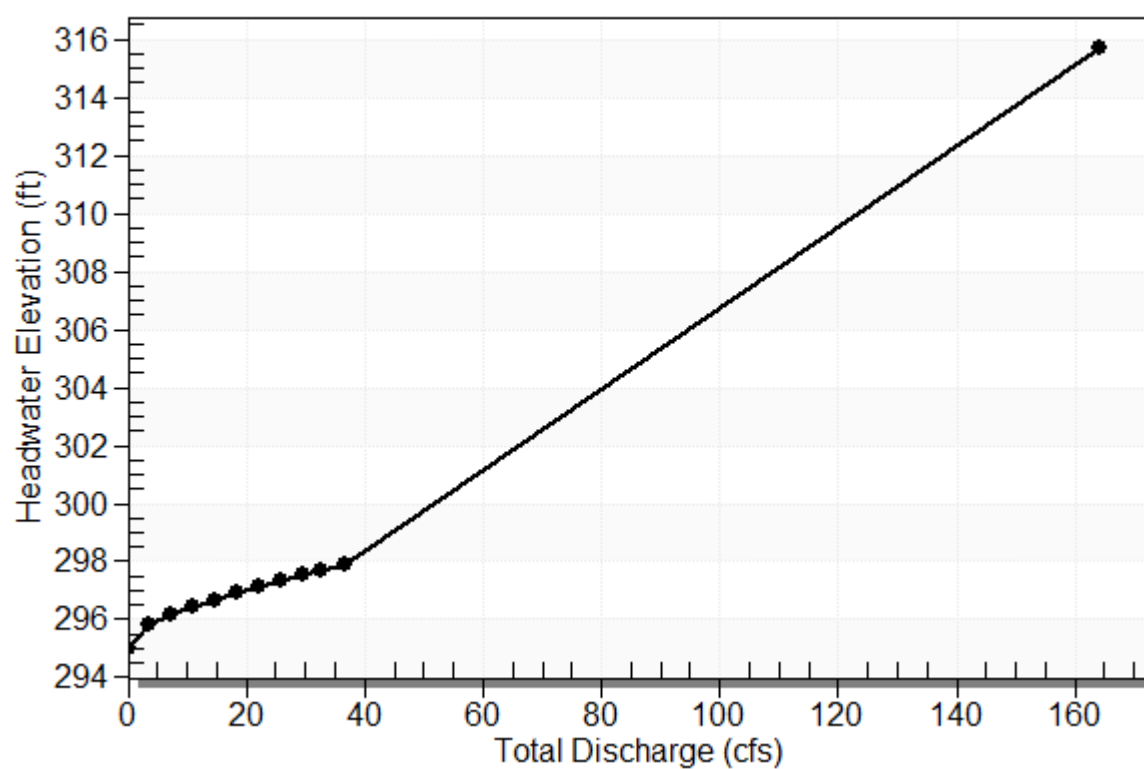
**Table 1 - Summary of Culvert Flows at Crossing: Crossing 56**

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 229+15 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
295.03	0.00	0.00	0.00	1
295.82	3.69	3.69	0.00	1
296.16	7.37	7.37	0.00	1
296.42	11.06	11.06	0.00	1
296.68	14.74	14.74	0.00	1
296.92	18.43	18.43	0.00	1
297.13	22.11	22.11	0.00	1
297.33	25.80	25.80	0.00	1
297.52	29.48	29.48	0.00	1
297.69	32.79	32.79	0.00	1
297.89	36.85	36.85	0.00	1
315.00	164.24	164.24	0.00	Overtopping

# Rating Curve Plot for Crossing: Crossing 56

## Total Rating Curve

Crossing: Crossing 56



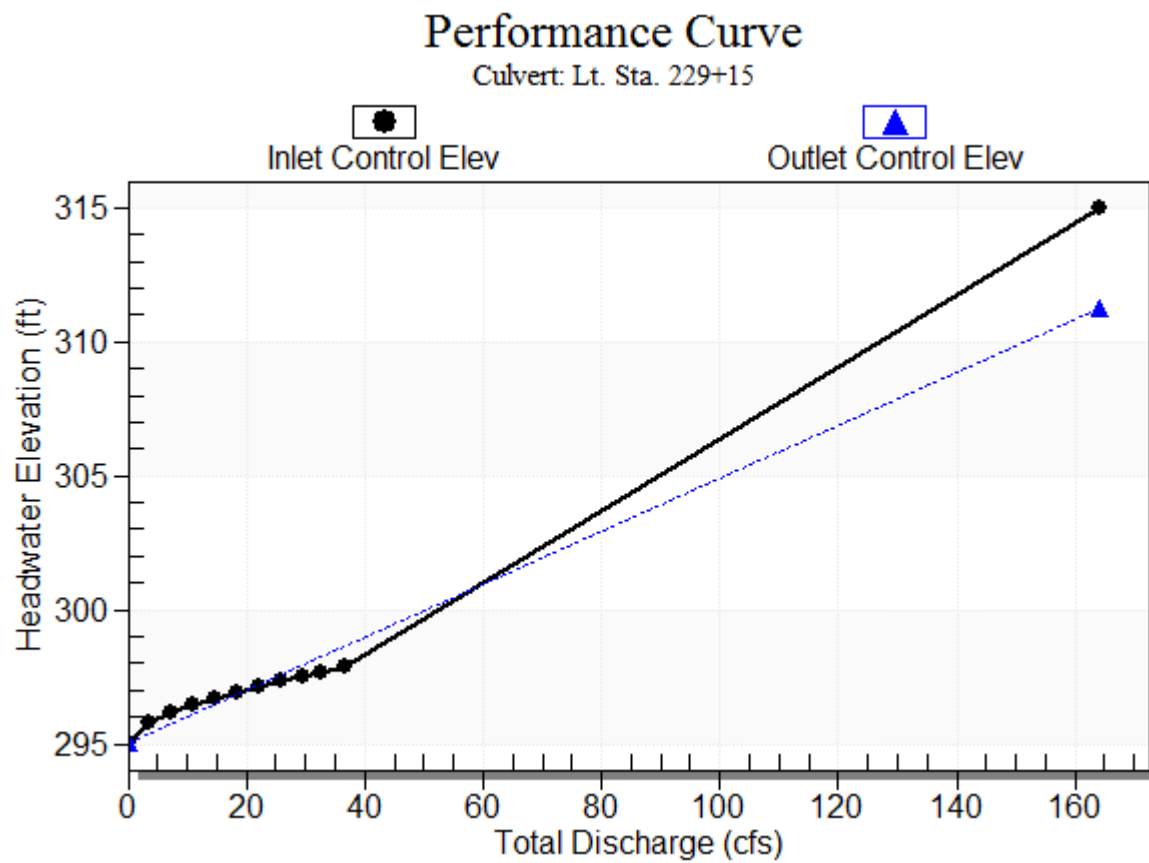
**Table 2 - Culvert Summary Table: Lt. Sta. 229+15**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	295.03	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
3.69	3.69	295.82	0.789	0.0*	1-S2n	0.312	0.594	0.312	0.358	11.769	2.322
7.37	7.37	296.16	1.126	0.0*	1-S2n	0.436	0.849	0.436	0.515	11.261	2.832
11.06	11.06	296.42	1.394	0.0*	1-S2n	0.555	1.051	0.555	0.631	12.333	3.169
14.74	14.74	296.68	1.650	0.0*	1-S2n	0.630	1.219	0.630	0.728	13.524	3.426
18.43	18.43	296.92	1.889	0.0*	1-S2n	0.706	1.375	0.706	0.811	14.403	3.637
22.11	22.11	297.13	2.104	0.0*	1-S2n	0.781	1.512	0.781	0.885	15.055	3.818
25.80	25.80	297.33	2.302	0.0*	1-S2n	0.847	1.635	0.863	0.953	15.420	3.976
29.48	29.48	297.52	2.491	0.0*	1-S2n	0.904	1.754	0.907	1.014	16.280	4.118
32.79	32.79	297.69	2.657	0.0*	1-S2n	0.955	1.856	0.964	1.066	16.651	4.235
36.85	36.85	297.89	2.862	0.0*	1-S2n	1.018	1.970	1.025	1.125	17.239	4.365

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert  
Inlet Elevation (invert): 295.03 ft,    Outlet Elevation (invert): 282.20 ft  
Culvert Length: 311.13 ft,    Culvert Slope: 0.0413  
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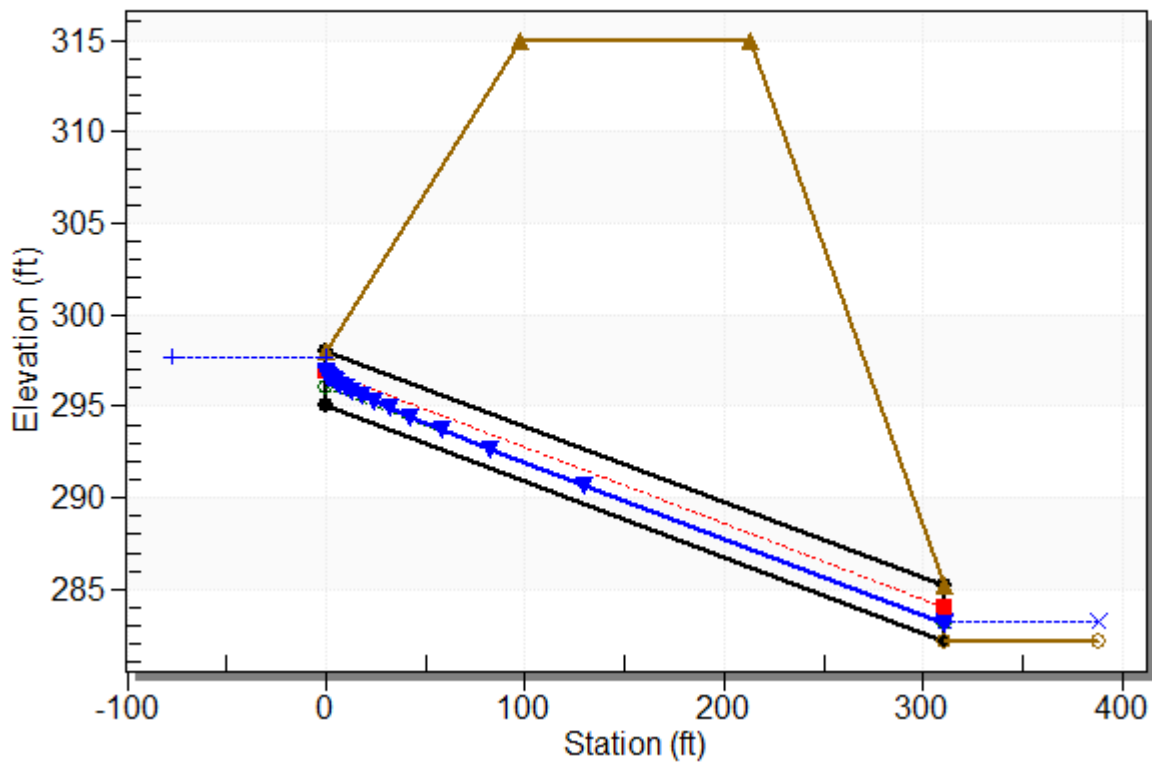
Culvert Performance Curve Plot: Lt. Sta. 229+15



## Water Surface Profile Plot for Culvert: Lt. Sta. 229+15

Crossing - Crossing 56, Design Discharge - 32.8 cfs

Culvert - Lt. Sta. 229+15, Culvert Discharge - 32.8 cfs



### Site Data - Lt. Sta. 229+15

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 295.03 ft

Outlet Station: 310.87 ft

Outlet Elevation: 282.20 ft

Number of Barrels: 1

### Culvert Data Summary - Lt. Sta. 229+15

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Grooved End Projecting

Inlet Depression: NONE

**Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 56)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	282.20	0.00	0.00	0.00	0.00
3.69	282.56	0.36	2.32	0.45	0.79
7.37	282.71	0.51	2.83	0.64	0.83
11.06	282.83	0.63	3.17	0.79	0.85
14.74	282.93	0.73	3.43	0.91	0.86
18.43	283.01	0.81	3.64	1.01	0.88
22.11	283.09	0.89	3.82	1.10	0.89
25.80	283.15	0.95	3.98	1.19	0.90
29.48	283.21	1.01	4.12	1.27	0.90
32.79	283.27	1.07	4.23	1.33	0.91
36.85	283.33	1.13	4.37	1.40	0.92

**Tailwater Channel Data - Crossing 56**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 3.00 ft

Side Slope (H:V): 4.00 (4:1)

Channel Slope: 0.0200

Channel Manning's n: 0.0375

Channel Invert Elevation: 282.20 ft

**Roadway Data for Crossing: Crossing 56**

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 315.00 ft

Roadway Surface: Paved

Roadway Top Width: 115.00 ft